

IN THE CLAIMS:

Claims 1, 4, 18, and 21 have been amended herein. All of the claims that remain pending and under consideration in the above-referenced application are presented, pursuant to 37 C.F.R. §§ 1.121(c)(1)(i) and 1.121(c)(3), in clean form below. Please enter these claims as amended. Also attached is a marked-up version of the claims, as amended herein, pursuant to 37 C.F.R. §1.121(c)(1)(ii). Please amend the claims as follows:

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1. (Amended) An apparatus for placing a plurality of conductive spheres on a substrate, comprising:

a stencil plate with upper and lower surfaces, a first pattern of a plurality of through-holes, and a second pattern having no through-holes, said stencil plate configured to place said plurality of conductive spheres in said first pattern on a proximate surface of said substrate;

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a hopper extending across at least a portion of said upper surface of said stencil plate and closely spaced therefrom to maintain control over all said spheres therein, said hopper having a bottom opening with a dimension extending across said first pattern for dispensing said spheres into said plurality of through-holes of said stencil plate, and being configured such that, as said hopper moves across said portion of said upper surface, only said spheres dropping into said plurality of through-holes can escape from said hopper; and

a positioning apparatus for moving said hopper over said first pattern relative said stencil plate to place said spheres into said plurality of through-holes and thereby onto said proximate surface of said substrate.

2. The apparatus of claim 1, wherein said spheres drop into and pass downwardly through said through-holes by gravitational force.

3. The apparatus of claim 1, wherein said first pattern corresponds to a pattern of bond pads on said substrate.

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4. (Amended) The apparatus of claim 1, wherein said apparatus for moving said hopper is configured to move said hopper to a portion of said upper surface containing said second pattern located on opposed sides of said first pattern.

5. The apparatus of claim 1, wherein the diameter of said through-holes of said first pattern are greater than the diameter of said spheres by up to 1 mm.

6. The apparatus of claim 1, wherein said stencil plate is spaced from said substrate to restrain said spheres dropped onto said substrate within said first pattern.

7. The apparatus of claim 1, wherein said stencil plate is spaced from said substrate to restrain said spheres dropped onto upwardly projecting prefluxed bond pads of said substrate.

8. The apparatus of claim 1, wherein said stencil plate is spaced from said substrate to restrain said spheres dropped onto depressed bond pads of said substrate.

18. (Amended) An apparatus for positioning a plurality of conductive spheres on a substrate, each conductive sphere of said plurality of conductive spheres having a diameter, said apparatus comprising:

a stencil plate having an upper surface, having a lower surface, having a first pattern of a plurality of through-holes, and a second pattern having no through-holes, each through-hole having a diameter, said stencil plate configured to position said plurality of conductive spheres in said first pattern on a proximate surface of said substrate;

a hopper extending across at least a portion of said upper surface of said stencil plate closely spaced therefrom to maintain control over all said spheres therein, said hopper having a bottom opening with a dimension extending across said first pattern for dispensing said spheres into said plurality of through-holes of said first pattern of said stencil plate, and being configured such that, as said hopper moves across said portion of said upper

surface, only said spheres dropping into said plurality of through-holes can escape from said hopper; and

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cancel a positioning apparatus for moving said hopper over said first pattern relative of said stencil plate to position said spheres into said plurality of through-holes and thereby onto said proximate surface of said substrate.

19. The apparatus of claim 18, wherein said spheres drop into and pass downwardly through said through-holes by gravitational force.

20. The apparatus of claim 18, wherein said first pattern corresponds to a pattern of bond pads on said substrate.

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cancel 21. (Amended) The apparatus of claim 18, wherein said apparatus for moving said hopper is configured to move said hopper to a portion of said upper surface containing said second pattern located on opposed sides of said first pattern.

22. The apparatus of claim 18, wherein the diameters of said through-holes of said first pattern are greater than the diameters of said plurality of spheres by up to 1 mm.

23. The apparatus of claim 19, wherein said stencil plate is spaced from said substrate to restrain said spheres dropped onto said substrate within said first pattern.

24. The apparatus of claim 20, wherein said stencil plate is spaced from said substrate to restrain said spheres dropped onto upwardly projecting prefluxed bond pads of said substrate.

25. The apparatus of claim 20, wherein said stencil plate is spaced from said substrate to restrain said spheres dropped onto depressed bond pads of said substrate.